PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(54) Title: DYNAMIC RULE BASED MARKET RESEARCH DATABASE

(57) Abstract

A market research database includes first and second information sets. The first information set contains first market research information, and the second information set contains second market research information. The market research database also includes a set of dynamic rules. At least one rule of the set of dynamic rules is arranged to respond to first data being entered into the first information set by entering second, different data into the second information set.

DYNAMIC RULE BASED MARKET RESEARCH DATABASE

Technical Field of the Invention

The present invention relates to a market research database incorporating a set of dynamic rules which respond to the input of information into the database in order to populate still other information into the database.

Background of the Invention

Information data models are used by database designers to model various environments. For example, information data models are used to model business environments in order to assure, *inter alia*, operational efficiency. The computer systems involved in modeling such an environment typically require complex computer-level manipulations, because the environment that is being modeled consists of many complex and interrelated objects. Such information systems exploit database management technology in order to promote efficient design, to enhance file maintenance and modification, to eliminate data file redundancy, and to provide substantial documentation regarding data file structure.

- 1 -

The implementation of an information management system utilizing database management technology typically involves the concept of at least dual data representations, i.e., logical representation and physical representation. A logical representation relates to the form in which data records are presented to, and interact with, the system user. A physical representation relates to the form in which individual data records are stored, and how the records are manipulated by the computer system. The physical representation of the data in the past has been regarded as of little or no concern to the end user because the task of manipulating data storage areas is a function of the system, and is established by system designers.

Disregard of the relationship between the physical representation of data and the end user has lead to databases which are difficult for the end user to use and manipulate. For example, market research databases are used to track the flow of products through one or more business enterprises and ultimately to an end user, such as a consumer. Such a database may be useful in determining the effective use of shelf space within a retailer, the effective use of advertising and other promotional campaigns, the effectiveness of distribution systems, the buying habits of consumers, retailers, wholesalers, and the like, and other

information which can make manufacturers and distributors of
products more efficient and profitable.

Databases which are used for market research and
analysis contain information typically stored in flat files
5   headed by uniform product codes (UPCs). Storing market
research data in flat files headed by uniform product codes,
however, has several problems. For example, uniform product
codes are typically recycled so that a uniform product code
that describes a particular product in one year may describe
10   a different product in a later year. While the users of
these uniform product codes are generally asked to wait a
full year before a uniform product code is recycled, uniform
product codes are frequently recycled within a year. There-
fore, uniform product codes may overlap different products
15   in terms of product related information that is stored in a
market research database.

That is, when a product is discontinued, its
associated uniform product code is discontinued for some
period of time. After this period of time, the discontinued
20   uniform product code may be recycled by associating it with
a newly introduced product. However, it may be necessary to
store information about both the discontinued product and
the newly introduced product in a market research database
because both products may still be in distribution (e.g.,

the discontinued product may still be on store shelves).
Moreover, even after the discontinued product and the newly
introduced product are no longer in distribution at the same
time, distributors and others may want product related

5   information about both. However, storing information about
a discontinued product and a newly introduced product, where
both are associated with the same uniform product code,
presents difficult problems to the database user and/or
designer.

10   Moreover, product related information storage
needs frequently change. For example, changing needs often
require the deletion or addition of fields. While the
deletion of fields in flat data files of a market research
database is not particularly difficult to implement, the

15   deletion of fields in such flat data files can lead to an
inefficient use of memory. Addition of fields in such a
market research database, however, is very difficult to
implement without changing the software that implements the
database.

20   Also, it is often desirable to track and report
the evolution of a product, a brand name, a business enter-
prise, and/or the like. Therefore, while many database
systems store data in historical perspective, tracking the
evolution of a product, a brand name, a business enterprise,

- 4 -

and/or the like is difficult because of the way in which the
data is stored. For example, it is known to use an addi-
tional code in connection with a uniform product code in
order to identify the generation of a product. However,
while this additional code may indicate that some aspect of
a product has changed, it does little to designate the
particular aspect of the product that has changed. To
determine the changed aspect, the data stored in connection
with the additional code must be closely examined and com-
pared to the data associated with other generations of the
same uniform product code in order to determine the changed
aspect.

Furthermore, it frequently occurs that information
to be entered into a database impacts more than one record
in the database. Such information about a particular prod-
uct is entered into various fields in order to describe the
characteristics, attributes, and other aspects of that
product. However, some or all of that same information may
be useful with respect to other records of the database.
For example, when a particular breakfast cereal is entered
into current databases, the characteristics, attributes, and
other aspects of the breakfast cereal which serve to define
the breakfast cereal are entered into a plurality of fields
and include the brand name of the cereal, the business

- 5 -

enterprise which packaged, wholesaled, distributed, and/or
the like the cereal, the particular package containing the
cereal, the size of the package, the particular grain or
grains which were used in making this cereal, and the like.
5   If the database also contains a competitive categories
section, the breakfast cereal must also be entered in a
competitive category, such as cold breakfast cereal or hot
breakfast cereal. Currently, when information about a
product is entered into the database, it must be manually
10   entered into all categories of the database in which the
product fits. This manual approach is expensive and labor
intensive.

        The present invention is directed to a market
research database which solves one or more of the problems
15   discussed above.

Summary of the Invention

        In accordance with one aspect of the present
invention, a market research database comprises first infor-
mation relating to a first aspect of market research data,
20   second information relating to a second aspect of market re-
search data, and a set of dynamic rules. At least one rule
of the set of dynamic rules is arranged to respond to entry

of first data into the first information by entering second
data into the second information.

In accordance with another aspect of the present
invention, a market research database comprises a first
information set containing first market research informa-
tion, a second information set containing second market
research information, and a third information set containing
a set of rules. At least one rule in the third information
set is arranged to respond to first data being entered into
the first information set by entering second data to the
second information set. The first data entered into the
first information set is different from the second data
entered into the second information set.

Brief Description of the Drawings

These and other features and advantages of the
present invention will become more apparent from a detailed
consideration of the invention when taken in conjunction
with the drawings in which:

Figure 1 is a block diagram of an exemplary data
processing system in which the market research database of
the present invention may be used;

Figure 2 is a block diagram of a market research
database which is arranged in accordance with the present

- 7 -

invention and which includes product definition information, product characteristic information, package information, package characteristic information, naked product information, naked product characteristic information, brand

5   name information, business enterprise information, characteristic value/type information, characteristic type information, characteristic value information, rule set information, and rule set characteristic information;

Figure 3 illustrates a table containing the prod-

10   uct definition information of Figure 2;

Figure 4 illustrates a table containing the product characteristic information of Figure 2;

Figure 5 illustrates a table containing the package information of Figure 2;

15   Figure 6 illustrates a table containing the package characteristic information of Figure 2;

Figure 7 illustrates a table containing the naked product information of Figure 2;

Figure 8 illustrates a table containing the naked

20   product characteristic information of Figure 2;

Figure 9 illustrates a table containing the brand name information of Figure 2;

Figure 10 illustrates a table containing the business enterprise information of Figure 2;

- 8 -

Figure 11 illustrates a table containing the characteristic value/type information of Figure 2;

Figure 12 illustrates a table containing the characteristic type information of Figure 2;

Figure 13 illustrates a table containing the characteristic value information of Figure 2;

Figure 14 illustrates an example useful in understanding the time links that are used in the above tables;

Figure 15 illustrates a table containing the rule set information of Figure 2;

Figure 16 illustrates a rule table containing rules; and,

Figure 17 illustrates a table containing competitive category information.

Detailed Description

As shown in Figure 1, a data processing system 10 provides an exemplary environment for the market research database of the present invention and includes a central repository 12. The central repository 12 stores a market research database 14 which will be described in more detail below. A work station 16, operating through a gateway 18, is used for entering market research data into the market research database 14 and for reading market research infor-

mation out of the market research database 14. Additional

work stations may also be provided for these purposes. The

work station 16 may be provided with a display in order to

present the user of the data processing system 10 with

5   various screen displays formatted for ease of data entry,

data manipulation, and report generation. The work station

16 may further have a keyboard, a bar code scanner for scan-

ning industry codes such as uniform product codes, an opti-

cal character recognition device, and/or the like.

10   Moreover, personal computers may be provided in

order to collect data about products in the field. One such

personal computer 20 is shown in Figure 1. The personal

computer 20 downloads its collected data to the central

repository 12 through a server 22 under control of the work

15   station 16. For example, the personal computer 20 can be

used to collect market research data from various retail,

wholesale, and/or other product outlet establishments re-

garding new products that have just become available.

              Market research data may be stored in the market

20   research database 14 in the form of tables which store

groups of similar data. However, it should be understood

that the market research data may be organized other than by

tables. Accordingly, the organization of data in the market

research database 14 may be generically referred to herein
as information sets.

As shown in Figure 2, the market research database
14 includes various information which relates to various

5   market aspects of products. For example, the market re-
search database 14 includes a product definition table 30, a
uniform product code table 32, a naked product table 34, a
package definition table 36, a brand name table 38, a busi-
ness enterprise table 40, a product characteristic role

10   table 42, a characteristic value table 44, a characteristic
type table 46, a characteristic value/type table 48, a
package characteristic role table 50, a naked product char-
acteristic role table 52, a rule definition table 54, and a
rule table 56. Although the product characteristic role

15   table 42, the package characteristic role table 50, and the
naked product characteristic role table 52 are shown as
tables containing certain information as discussed below, it
should be understood that this information is role informa-
tion and instead may be scattered throughout other tables of

20   the market research database 14.

The product definition table 30 stores product
definition codes which, like uniform product codes, are used
to designate corresponding products that are defined ac-
cording to links also stored in the product definition table

- 11 -

30 of the market research database 14. These product defi-
nition codes function to divorce products and their product
related information from the products' uniform product
codes. Accordingly, a product definition code is perma-
nently assigned to the product and is used throughout the
market research database 14, where appropriate, to designate
the product and to provide a link to the information about
the product stored in other tables of the market research
database 14. A product definition code is assigned to a
product the first time that any information about the prod-
uct is stored in the market research database 14, and is not
recycled as are uniform product codes.

However, in order to facilitate the entry of data
into the market research database 14, the product definition
code stored in the product definition table 30 is linked,
where applicable, to a corresponding uniform product code
which is stored in the uniform product code table 32. Thus,
for example, if a new product is introduced into the market
and has been assigned a new uniform product code, that new
uniform product code can be scanned by the personal computer
20 and relevant information about the product as contained
in that new uniform product code can be populated into the
relevant tables of the market research database 14 under
control of a set of rules stored in the rule table 56.

- 12 -

Additional product related information can be manually

entered.

However, if a uniform product code is recycled,

the old product formerly associated with it can remain in

5   the market research database 14 under its original product

definition code, and a new product definition code is as-

signed to the new product that is designated by the recycled

uniform product code. Thus, the old link between the prod-

uct definition code for the old product and the uniform

10   product code is moved to a historical layer, and a new link

between the new product definition code and the recycled

uniform product code is established in a current layer. As

a result, information about the old and new products may be

maintained in the market research database 14 at the same

15   time in a simple and non-confusing manner. Moreover, be-

cause products, and information about the products, have

been divorced from their corresponding uniform product

codes, recycling of uniform product codes does not require

substantial changes to the information stored in the market

20   research database 14.

As product related information is entered into the

market research database 14, this product related informa-

tion can be viewed on the display of the work station 16 so

that any erroneous information may be corrected and so that
additional information may be entered.

The product definition table 30 links the product
definition codes stored therein with product related infor-
mation which defines the products designated by the product
definition codes and which is stored in other tables. For
example, the naked product table 34 contains information
about naked products. That is, most of us think of a prod-
uct as the combination of a package and a substance con-
tained within the package. The substance, absent its pack-
age, is referred to herein as a naked product.

For example, the naked product table 34 might
contain cola as an item of information, whereas the product
definition table 30 has links between cola, as stored in the
naked product table 34, and other product related informa-
tion such as a package, a size, and the like, stored in
other tables. Put together, the naked product, and the
other information, linked to a product definition code of
the product definition table 30, define a product as is
commonly understood by the consumer.

Thus, the product definition table 30 is also
linked to the package definition table 36 which contains
definitions of various packages which are or have been used
to enclose naked products in order to form products. The

- 14 -

naked product table 34 has links to the brand name table 38
which contains brand names of products. Because several
naked products may have a brand name associated with them,
each brand name stored in the brand name table 38 may be

5   linked to multiple naked products stored in the naked prod-
uct table 34. The brand name table 38 is linked to the
business enterprise table 40. Each business enterprise
stored in the business enterprise table 40 may be associated
with plural brand names stored in the brand name table 38.

10   For example, the business enterprise table 40 may contain
business enterprises which package, wholesale, and retail a
brand name, and so on.

        The product definition table 30 is linked to a
product characteristic role table 42. The primary function

15   of the product characteristic role table 42 is to link
product definition codes stored in the product definition
table 30 to various characteristic types and values. Ac-
cordingly, the product characteristic role table 42 links
the product definition table 30 to a characteristic value

20   table 44, and the characteristic value table 44 contains
links to the characteristic type table 46 and the character-
istic value/type table 48. Thus, a definition of a product
is partially completed by the characteristic types of the
characteristic type table 46 and by the characteristic

- 15 -

values of the characteristic value/type table 48 to which
the product is linked.

The characteristic type table 46 contains charac-
teristic type information such as flavor, size, color, and
the like. The characteristic value/type table 48 contains
values of the characteristic types stored in the character-
istic type table 46. For example, the characteristic val-
ue/type table 48 may store grape, orange, cherry, and the
like as values of the type "flavor" stored in the character-
istic type table 46, 12 ounces, 5 pounds, 1 liter, and the
like as values of the type "size" stored in the characteris-
tic type table 46, and red, green, blue, and the like as
values of the type "color" stored in the characteristic type
table 46.

Similarly, the package characteristic role table
50 links package codes stored in the package definition
table 36 to characteristic value/type codes stored in the
characteristic value table 44 (package codes are also linked
to product definition codes in the product definition table
30). The primary function of the package characteristic
role table 50 is to link package codes stored in the package
definition table 36 to various characteristic types and
values. Accordingly, the package characteristic role table
50 links the package definition table 36 to the characteris-

tic value table 44, and the characteristic value table 44 contains links to the characteristic type table 46 and the characteristic value/type table 48. Thus, a definition of a package is completed by the characteristic types of the characteristic type table 46 to which the package is linked, and by the characteristic values of the characteristic value/type table 48 to which the package is also linked. For example, a package may be defined in terms of character- istic types such as aluminum can, cardboard box, and the like, and in terms of characteristic values such as the size of the container.

The naked product characteristic role table 52 links naked product codes stored in the naked product table 34 to characteristic value/type codes stored in the charac- teristic value table 44. In turn, the characteristic value table 44 contains links to the characteristic type table 46 and the characteristic value/type table 48. Thus, the naked product characteristic role table 52 links naked product codes stored in the naked product table 34 to characteristic value/type codes stored in the characteristic value table 44, and the characteristic value/type codes stored in the characteristic value table 44 are linked to characteristic types stored in the characteristic type table 46 and to characteristic values stored in the characteristic val-

- 17 -

ue/type table 48. Thus, the naked product cola may be
defined in terms of a characteristic type such as its color
and in terms of certain characteristic values such as brown.

      As can be seen from Figure 2, the market research
database 14 is a database in third normal form as opposed
to, for example, flat data files of current market research
databases. Thus, instead of a flat file consisting of a
string of information including a uniform product code, a
package, brand names, business enterprises, and the like,
the market research database 14 is broken up into various
information tables each containing similar product related
information and each containing links to product related
information contained in other information tables. The
definition of a product is created in the product definition
table 30 by providing the beginning links which, in combina-
tion with the links in other information tables, define each
particular product.

      The third normal form of the market research
database 14 makes the addition of information much easier
than if the market research database 14 were stored as flat
data files. In essence, each of the tables 30-56 shown in
Figure 2 is depthless in the sense that information can be
added to each of these information tables without defining
new fields and the like inherent with flat data files.

Moreover, although particular tables 30-56 have been de-
scribed in connection with the market research database 14,
it should be understood that the market research database 14
may include different, fewer, or more tables than those

5   specifically shown in Figure 2. Furthermore, each of the
tables 30-56 shown in Figure 2 may be combined with others
of the shown tables, or may be separated into additional
sub-tables. However, it should be noted that combining the
tables 30-56 tends to cause the market research database 14

10   to retreat from its third normal form, making the market
research database 14 more difficult to use.

        The product definition table 30 is shown in more
detail in Figure 3. The product definition table 30 in-
cludes a product definition code column 60 in which are

15   stored the product definition codes of the various products
contained within the market research database 14. The
product definition codes, as well as any of the other codes
discussed herein, may be any combination of alphabetical,
numeric, and/or other symbols. For each product definition

20   code stored in the product definition code column 60, a
historical control designator is stored in a historical
control column 62. In essence, the historical control
designators stored in the historical control column 62
define time layers of product related information. The

- 19 -

historical control designator indicating the current time
layer of information in the market research database 14 may
be referred to herein as the current historical control
designator. This current time layer provides the defini-
tions of products currently in effect. Those historical
control designators, which designate layers of information
in the market research database 14 prior to the current time
layer of information, may be referred to as previous histor-
ical control designators.

Thus, a product definition code stored in the
product definition code column 60 may have several entries
in the product definition code column 60, with each such
entry having a different historical control designator. One
such entry may relate to one definition of a product, anoth-
er such entry may relate to another definition of the prod-
uct, and so on.   Accordingly, a product may be tracked as
its brand name, package, uniform product code, related
business enterprises, and/or the like changes. If a user
wishes to determine any current or previous definition of
one or more products, the user may use the current histori-
cal control designator in order to extract information from
the market research database 14 which defines such product
or products at the current or previous time period.

Moreover, the historical control designator as-
signed to the current time layer of information stored in
each of the other tables of the market research database 14
may be identical to the historical control designator as-
signed to the current time layer of information stored in
the product definition table 30 so that the current time
layer of information across the entire market research
database 14 may be easily determined.

Each product definition code as stored in the
product definition table 30 also has associated therewith a
historical counter control designator stored in a historical
counter control column 64 (which designates the number of
historical layers in the relevant table), a product name
stored in a product name column 66, a package code stored in
a package code column 68, a naked product code stored in a
naked product column 70, a uniform product code stored in a
uniform product code column 72, and an effective date stored
in an effective date column 74. The product definition
table 30 may include different information, or other infor-
mation, such as an end date on which a particular product
definition code and its associated product name, package
code, and/or the like was ended, a product description,
which is a text description of a particular product, and the
like.

- 21 -

The product names stored in the product name
column 66 may be different from the brand names of the prod-
ucts, and may instead be short titles which are intended to
be at least somewhat descriptive of the products defined in
5   the product definition table 30. The package codes stored
in the package code column 68 provide links between the
product definition codes stored in the product definition
code column 60 of the product definition table 30 and pack-
age codes stored in the package definition table 36 of the
10 market research database 14. The naked product codes stored
in the naked product column 70 link the product definition
codes stored in the product definition code column 60 of the
product definition table 30 with naked product codes stored
in the naked product table 34. The uniform product codes
15 stored in the uniform product column 72 link the product
definition codes stored in the product definition code
column 60 with uniform product codes stored in the uniform
product code table 32.

The effective dates stored in the effective date
20 column 74 are used to indicate the effective dates of corre-
sponding combinations of product definition codes stored in
the product definition code column 60, historical control
designators stored in the historical control column 62,
historical counter control designators stored in the histor-

- 22 -

ical counter control column 64, product names stored in the
product name column 66, package codes stored in the package
code column 68, naked product codes stored in the naked
product column 70, and uniform product codes stored in the
uniform product code column 72. Thus, the dates on which
product definition codes are defined or redefined in terms
of their product names, their packages, their naked prod-
ucts, their uniform product codes, and/or the like may be
determined from the effective date column 74.

        The product characteristic role table 42 is shown
in more detail in Figure 4 and includes a product definition
code column 80 which links a particular product definition
stored in the product definition table 30 as designated by
its product definition code with a characteristic type code
stored in a characteristic type code column 82, a character-
istic value code stored in a characteristic value code
column 84, a historical control designator stored in a
historical control designator column 86, and the like.
Thus, as discussed above, the product characteristic role
table 42 links products as defined in the product definition
table 30 to characteristic value/type codes stored in the
characteristic value table 44.

        The historical control column 86 stores historical
control designators which permit the evolution of product

                            - 23 -

characteristics associated with particular products to be easily tracked.

The package definition table 36 is shown in more detail in Figure 5. The package definition table 36 includes a package code column 90 in which package codes associated with various packages may be stored. For each package code stored in the package code column 90, a package name is stored in a package name column 92, a historical control designator is stored in a historical control column 94, a historical counter control designator is stored in a historical counter control column 96, an effective date is stored in an effective date column 98, an end date is stored in an end date column 100, and a package description is stored in a package description column 102. The package definition table 36 may include different or other information as well.

The package names stored in the package name column 92 may be short titles which are intended to be at least somewhat descriptive of the packages defined in the package definition table 36. As in the case of the historical control designators stored in other tables, the historical control designators stored in the historical control column 94 define time layers in the package definition table 36. Thus, a package code may have several entries in the

package code column 90 with each such entry having a different historical control designator. One such entry may relate to one definition of a package, another such entry may relate to another definition of the package, and so on.

5   The package codes stored in the package code column 90 of the package definition table 36, and the package codes stored in the package code column 68 of the product definition table 30, act as links between the product definitions stored in the product definition table 30 and

10   package definitions stored in the package definition table 36 of the market research database 14. The effective dates stored in the effective date column 98 are used to indicate the effective dates of corresponding combinations of package codes stored in the package code column 90, package names

15   stored in the package name column 92, historical control designators stored in the historical control column 94, historical counter control designators stored in the historical counter control column 96, and the like. Thus, the dates on which package codes are defined or redefined in

20   terms of their package names and/or the like may be determined from the effective date column 98.

       Because a particular package may evolve through time, there may be several entries in the package definition table 36 headed by the same package code in the package code

column 90. The current definition of a package can be
determined from the current historical control designator
stored in the historical control column 94. The effective
date of a package definition may be determined from the
5   effective date column 98, the end date of a particular
package definition may be determined from the end date
column 100, and a description of a package definition may be
determined from the package description column 102.

The package characteristic role table 50 is shown
10   in more detail in Figure 6 and includes a package code
column 110 which provides links between package definitions
stored in the package definition table 36 and characteristic
type codes stored in a characteristic type code column 112,
characteristic value codes stored in a characteristic value
15   code column 114, historical control designators stored in a
historical control designator column 116, and the like.
Thus, the package characteristic role table 50 links package
definitions associated with package codes stored in the
package definition table 36 to characteristic value/type
20   codes stored in the characteristic value table 44. The
historical control column 116 stores historical control
designators which permit the evolution of package charac-
teristics associated with particular packages to be easily
tracked.

The naked product table 34 is shown in more detail in Figure 7. The naked product table 34 includes a naked product code column 120 in which naked product codes associated with various naked products may be stored. For each naked product code stored in the naked product code column 120, a historical control designator is stored in a historical control column 122, a historical counter control designator is stored in a historical counter control column 124, a naked product name is stored in a naked product name column 126, a brand name code is stored in a brand name code column 128, and an effective date is stored in an effective date column 130. As in the case of the other tables of the market research database 14, the naked product table 34 may include other columns such as a naked product description column for providing a description of each of the naked products stored in the naked product table 34.

As in the case of historical control designators stored in other tables, the historical control designators stored in the historical control column 122 define time layers in the naked product table 34. Thus, a naked product code may have several entries in the naked product code column 120 with each such entry having a different historical control designator. One such entry may relate to one definition of a naked product, another such entry may relate

to another definition of the naked product, and so on. The
naked product names stored in the naked product name column
126 may be short titles which are intended to be at least
somewhat descriptive of the naked products defined in the
5   naked product table 34.

The naked product codes stored in the naked prod-
uct code column 120 of the naked product table 34, and the
naked product codes stored in the naked product code column
70 of the product definition table 30, link the product
10   definitions of the product definition table 30 and the naked
products stored in the naked product table 34 of the market
research database 14. The effective dates stored in the
effective date column 130 are used to indicate the effective
dates of corresponding combinations of naked product codes
15   stored in the naked product code column 120, historical
control designators stored in the historical control column
122, historical counter control designators stored in the
historical counter control column 124, naked product names
stored in the naked product name column 126, brand names
20   stored in the brand name column 128, and the like. Thus,
the date on which a naked product code is defined or rede-
fined in terms of its naked product name, brand name, and/or
the like may be determined from the effective date column
130.

- 28 -

As shown in Figures 2, 3, and 7, each product as defined in the product definition table 30 may be linked to a brand name stored in the brand name table 38 through the naked product table 34. Thus, a brand name may be linked to a product definition stored in the product definition table 30 by its brand name code stored in both the naked product table 34 and the brand name table 38 and by corresponding naked product codes stored in both the product definition table 30 and the naked product table 34. It should be understood, however, that brand names may be linked to product definitions stored in the product definition table 30 by other mechanisms, such as a brand name column added to the product definition table 30. However, as discussed above, such a combination of tables retreats from the third normal form of the market research database 14.

The naked product characteristic role table 52 is shown in more detail in Figure 8 and includes a naked product code column 140 which links a particular naked product stored in the naked product table 34 with a characteristic type code stored in a characteristic type code column 142, and a characteristic value code stored in a characteristic value code column 144. Thus, the naked product characteristic role table 52 links naked products stored in the naked product table 34 to characteristic value/type codes stored

- 29 -

in the characteristic value table 44. The naked product
characteristic role table 52 may include other columns, in
addition to those shown in Figure 8, such as a historical
control column which may include a current historical con-

5   trol designator to designate the current time layer of
information stored in the naked product characteristic role
table 52.

The brand name table 38 is shown in more detail in
Figure 9. The brand name table 38 includes a brand name

10   code column 150 in which brand name codes associated with
various brand names may be stored. For each brand name code
stored in the brand name code column 150, a brand name is
stored in a brand name column 152, a business enterprise
code is stored in a business enterprise code column 154, a

15   historical control designator is stored in a historical
control column 156, a historical counter control designator
is stored in a historical counter control column 158, and an
effective date is stored in an effective date column 160.
As in the case of the other tables of the market research

20   database 14, the brand name table 38 may include different
or other columns containing different or other information.

As in the case of historical control designators
stored in other tables, the historical control designators
stored in the historical control column 156 define time

- 30 -

layers in the brand name table 38, and the evolution of a
brand name as stored in the brand name table 38 may be
followed through the use of the historical control designa-
tors stored in the historical control column 156 and/or the
effective dates stored in the effective date column 160.
Thus, a brand name code may have several entries in the
brand name code column 150, with each such entry having a
different historical control designator. The brand names
stored in the brand name column 126 are actual brand names
and are identified by the brand name codes in the brand name
table 34.

The brand name codes stored in the brand name code
column 150 of the brand name table 38 match brand name codes
stored in the business enterprise table 40 in order to link
business enterprises of the business enterprises table 40
with brand names stored in the brand name table 38 of the
market research database 14. The effective dates stored in
the effective date column 160 are used to indicate the
effective dates of corresponding combinations of brand name
codes stored in the brand name code column 150, brand names
stored in the brand name column 152, business enterprise
names stored in the business enterprise name column 154,
historical control designators stored in the historical
control column 156, and historical counter control designa-

tors stored in the historical counter control column 158,
and the like. Thus, the dates on which a brand name code is
defined or redefined in terms of its brand name, business
enterprise, and/or the like may be determined from the
effective date column 160.

As shown in Figures 2, 3, 7, and 9, each product
as defined in the product definition table 30 may be linked
to a business enterprise name stored in the business enter-
prise table 40 through the naked product table 34 and the
brand name table 38. It should be understood, however, that
business enterprise names may be linked to product defini-
tions stored in the product definition table 30 by other
mechanisms, such as a business enterprise name column added
to the product definition table 30.

The business enterprise table 40 is shown in more
detail in Figure 10. The business enterprise table 40 in-
cludes a business enterprise code column 170 in which busi-
ness enterprise codes associated with various business
enterprises may be stored. For each business enterprise
code stored in the business enterprise code column 170, a
business enterprise name is stored in a business enterprise
name column 172, a historical control designator is stored
in a historical control column 174, a historical counter
control designator is stored in a historical counter control

column 176, and an effective date is stored in an effective

date column 178. The business enterprise table 38 may

include different or other columns containing different or

other information.

As in the case of historical control designators

stored in other tables, the historical control designators

stored in the historical control column 174 define time

layers in the business enterprise table 40, and the evolu-

tion of a business enterprise as stored in the business

enterprise table 40 may be followed through the use of the

historical control designators stored in the historical

control column 174 and/or the effective dates stored in the

effective date column 178. Thus, a business enterprise code

may have several entries in the business enterprise code

column 170, with each such entry having a different histori-

cal control designator. The business enterprise names

stored in the business enterprise name column 172 are actual

business enterprise names and are identified by the business

enterprise codes in the business enterprise table 40.

The effective dates stored in the effective date

column 178 are used to indicate the effective dates of

corresponding combinations of business enterprise codes

stored in the business enterprise code column 170, business

enterprise names stored in the business enterprise name

column 172, historical control designators stored in the historical control column 174, historical counter control designators stored in the historical counter control column 176, and the like. Thus, the dates on which a business enterprise code is defined or redefined in terms of its business enterprise name and/or the like may be determined from the effective date column 178.

The characteristic value table 44 is shown in more detail in Figure 11. The characteristic value table 44 includes characteristic type codes stored in a characteristic type code column 180, characteristic value codes stored in a characteristic value code column 182, historical control designators stored in a historical control column 184, historical counter control designators stored in a historical counter control column 186, and effective dates stored in an effective date column 188. The characteristic value table 44 may include different or other columns containing different or other information.

Accordingly, the characteristic type codes and the characteristic value codes stored in the characteristic value table 44 link the product definition codes stored in the product characteristic role table 42, the naked product codes stored in the naked product characteristic role table 52, and the package codes stored in the package characteris-

tic role table 50, with characteristic types and character-
istic values stored in the characteristic type table 46 and
the characteristic value/type table 48.

        The evolution of characteristic value/type codes
may be tracked through the historical control designators
stored in the historical control column 184 and/or the
effective dates stored in the effective date column 188.

        The characteristic type table 46 is shown in more
detail in Figure 12. The characteristic type table 46
includes characteristic type codes stored in a characteris-
tic type code column 190, characteristic type names stored
in a characteristic type name column 192, historical control
designators stored in a historical control column 194,
historical counter control designators stored in a histori-
cal counter control column 196, and effective dates stored
in an effective date column 198. The characteristic type
table 46 may include different or other columns containing
different or other information.

        Accordingly, each characteristic type name, such
as flavor, size, color, and the like, as stored in the
characteristic type name column 192, is associated with a
characteristic type code stored in the characteristic type
column 190, and with a historical control designator stored
in the historical control column 194, a historical counter

- 35 -

control designator stored in the historical counter control

column 196, and an effective date stored in the effective

date column 198. The characteristic type codes provide the

links between these characteristic type names and the prod-

uct definitions stored in the product definition table 30,

the package definitions stored in the package definition

table 36, and the naked products stored in the naked product

table 34.

The characteristic value/type table 48 is shown in

more detail in Figure 13. The characteristic value/type

table 48 includes characteristic value codes stored in a

characteristic value code column 200, characteristic values

stored in a characteristic value column 202, historical con-

trol designators stored in a historical control column 204,

historical counter control designators stored in a histori-

cal counter control column 206, and effective dates stored

in an effective date column 208. The characteristic val-

ue/type table 48 may include different or other columns

containing different or other information.

Accordingly, each characteristic value, such as 12

ounces, 5 pounds, 1 liter, and the like, as stored in the

characteristic value column 202, is associated with a char-

acteristic value code stored in the characteristic value

column 200 and with a historical control designator stored

in the historical control column 204, a historical counter
control designator stored in the historical counter control
column 206, and an effective date stored in the effective
date column 208. The characteristic value codes provide the

5   links between these characteristic values and the product
definitions stored in the product definition table 30, the
package definitions stored in the package definition table
36, and the naked products stored in the naked product table
34.

10   The usefulness of historical control designators
and effective dates may be understood in connection with
Figure 14. As shown in Figure 14, a brand name table 210
includes a brand name code column 212 for storing brand name
codes, a brand name column 214 for storing brand names

15   associated with the brand name codes, a historical control
column 216 for storing historical control designators asso-
ciated with the brand name codes, a historical counter
control column 218 for storing historical counter control
designators, an effective date column 220 for storing effec-

20   tive dates associated with the brand name codes, and/or the
like. In the example of Figure 14, one brand name code
having a value of 1 has associated with it three different
brand names. Thus, over the life of a particular product
contained in the product definition table 30, the product

- 37 -

had three different brand names. The current brand name, which was put into effect on 1/1/97 is ABC. The current brand name is associated with a historical control designator having a value of zero indicating that the current brand name ABC is at the current time layer of the information stored in the brand name table 210. Prior to the brand name ABC, the product had the brand name A BC which was put into effect on 1/1/96 and which was stopped being used on 1/1/97. The historical control designator for A BC has a value of 1 indicating that the brand name A BC was in a layer of information prior to the current time layer of information in the brand name table 210. Furthermore, prior to the use of the brand name A BC, the product was associated with the brand name AB C and, accordingly, has a historical control designator having a value of 2 associated therewith. This brand name AB C was put into effect on 1/1/95 and was stopped being used on 1/1/96.

A second brand name (i.e., DEF) associated with a second brand name code, having a value of 2, is shown in the brand name table 210. This brand name was put into effect on 4/1/97 and has a historical control designator having a value of zero indicating that this brand name is at the current time layer of information in the brand name table 210.

- 38 -

The use of the historical control designators in
the historical control column 216 as shown in Figure 14
and/or effective dates stored in the effective date column
220 is similar to the use of the historical control designa-
tors in the historical control columns and/or effective
dates in the effective data columns of other tables in the
market research database 14. If a user desires a report
which includes information in the current time layer of
information of the market research database 14, the user
looks for all relevant information having a historical
control designator of zero. While the historical control
designator of zero is used to indicate the current time
layer of information in the market research database 14, the
designator which is used as the historical control designa-
tor for the current time layer of information may have any
other value or value sequence, number or number sequence,
alphabetical character or alphabetical sequence, or alphanu-
meric character or alphanumeric sequence.

There also may be tables in addition to those
shown in Figures 2-13. For example, there may be a category
table storing product definition codes linked to certain
categories into which products may be segmented, a commodity
group table storing product definition codes linked to
certain commodity groups into which products may be segment-

ed, and a common product name table storing product defini-
tion codes linked to common product names.

The rule definition table 54 is shown in more
detail in Figure 15. The rule definition table 54 includes
rule codes stored in a rule code column 230, competitive
category codes stored in a competitive category code column
232, historical control designators stored in a historical
control column 234, historical counter control designators
stored in a historical counter control column 236, effective
dates stored in an effective date column 238, rule descrip-
tions stored in a rule description column 240, and/or the
like.

Each rule stored in the rule table 56 may have
certain characteristics associated therewith. The rule
table 56 links the rule codes stored in the rule definition
table 54 with the rules stored in the rule table 56. Ac-
cordingly, the rule table 56 includes rule codes which are
stored in a rule code column 242, and which are linked to
the rules stored in the rule column 244.

The rule descriptions stored in the rule descrip-
tion column 240 of the rule definition table 54 may describe
or define the corresponding rules stored in the rule table
56. The rule codes stored in the rule code column 230
correspond to the competitive category codes stored in the

competitive category code column 232. The competitive
category codes stored in the competitive category code
column 232 indicate competitive categories which are to be
populated with information depending upon the applicable
rules stored in the rule table 56.

        For example, one such competitive category rule
may be the following: (i) where the input category is equal
to Dish and Laundry Cleaner and Aid, and (ii) the input
commodity group is equal to Fabric Softener Product, and
(iii) the input common product name is Antistatic Spray or
Fabric Wrinkle Remover Spray, and (iv) the input package
characteristic is aerosol or pump, and (v) another input
package characteristic is fluid ounces, then (vi) the as-
signed competitive category is Fabric Antistatic/Wrinkle
Spray - Fl OZ.

        As indicated by this example, the competitive
category rules stored in the rule definition table 54 are
initiated by the entry of data into the market research
database 14. For example, a new breakfast cereal may be
entered into the market research database 14 by assigning to
it a product definition code and inserting the product
definition code in the product definition code column 60 of
the product definition table 30. Also inserted into the
product definition table 30 in association with the new

- 41 -

product definition code for the new breakfast cereal will be a historical control designator, a historical counter control designator, a product name, a package code indicating the package which contains the new breakfast cereal, a naked product code, an uniform product code if assigned, and the like. Moreover, characteristic type codes and characteristic value codes are entered into the product characteristic role table 42 in order to define the product.

A rule in the rule table 56 may be triggered upon entry of this data in order to assign the new breakfast cereal to a competitive category identified by its competitive category code as stored in the competitive category code column 232 of the rule definition table 54. Thus, this rule, when triggered, causes the new breakfast cereal to be stored in a competitive category table 250.

The competitive categories table 250 is illustrated in Figure 17. The competitive categories table 250 stores competitive category codes in a competitive category code column 252, competitive category names in a competitive category name column 254, historical control designators in a historical control column 256, historical counter control designators stored in a historical counter control column 258, effective dates stored in an effective date column 260, product definition codes stored in a product definition code

- 42 -

column 262, and/or the like. The competitive category codes
stored in the competitive category code column 252 link the
competitive categories stored in the competitive categories
table 250 with the rules stored in the rule table 56. Thus,
when a competitive category rule stored in the rule table 56
is triggered, a product definition code is entered into the
product definition code column 262 associated with a compet-
itive category name. In the example above, the product
definition code given to the new breakfast cereal will be
inserted into the competitive category table 250 in associa-
tion with a competitive category name. In this way a prod-
uct is linked to a competitive category by its product
definition code.

The rules stored in the rule table 56 may be used
to populate information into tables other than the competi-
tive categories table 250. For example, value mapping rules
may also be stored in the rule table 56.

An example of a value mapping rule may be the
following: (i) where the input commodity group is equal to
Cereal, and (ii) the input product characteristic type is
Flavor, and (iii) the input product characteristic value is
Apple and Cinnamon, the (iv) set the characteristic value to
the new value Apple Cinnamon.

The package codes stored in the package definition
table 36 and in the product definition table 30, and the
characteristic type codes and characteristic value codes
stored in the package characteristic role table 50 and the
5   characteristic value table 44, are the links to the charac-
teristic types and characteristic values stored in the
characteristic type table 46 and the characteristic val-
ue/type table 48 which define a package that, in turn, help
to define a product of the product definition table 30.

10   Similarly, the naked product codes stored in the
naked product table 34 and in the product definition table
30, and the characteristic type codes and characteristic
value codes stored in the naked product characteristic role
table 52 and the characteristic value table 44, are the
15   links to the characteristic types and characteristic values
stored in the characteristic type table 46 and the charac-
teristic value/type table 48 which define a naked product
that, in turn, also helps to define a product of the product
definition table 30.

20   Moreover, the naked product codes stored in the
naked product table 34 and in the product definition table
30, and the brand name codes stored in the naked product 34
and the brand name table 38, are the links to the brand

names stored in the brand name table 38 that further help to
define a product of the product definition table 30.

Additionally, the naked product codes stored in
the naked product table 34 and in the product definition
table 30, the brand name codes stored in the naked product
34 and the brand name table 38, and the business enterprise
codes stored in the brand name table 38 and the business
enterprise table 40, are the links to the business enter-
prises stored in the business enterprise role table 50 that
move the products of the product definition table 30 through
their distribution chains.

Certain modifications of the present invention
have been discussed above. Other modifications will occur
to those practicing in the art of the present invention.
For example, while the present invention has been described
above in relation to uniform product codes, a uniform prod-
uct code is only one example of the type of industry code
that may be used in connection with the present invention.
Therefore, it should be understood that the present inven-
tion is useful in connection with any type of industry code.

Also, Figure 1 illustrates the data processing
system 10 as an exemplary data processing system which may
be used to store and access market research data in the
market research database 14. However, it should be under-

- 45 -

stood that other data processing systems may be used to
store and access market research data in the market research
database 14.

　　　　Furthermore, a code, such as used herein in con-
nection with product definition codes, naked product codes,
brand name codes, business enterprise codes, package codes,
characteristic value/type codes, characteristic type codes,
characteristic value codes, rule codes, and competitive
category codes, can be any alphabetical, numeric, alphanu-
meric, or other symbol or set of symbols or ID.

　　　　Accordingly, the description of the present inven-
tion is to be construed as illustrative only and is for the
purpose of teaching those skilled in the art the best mode
of carrying out the invention. The details may be varied
substantially without departing from the spirit of the
invention, and the exclusive use of all modifications which
are within the scope of the appended claims is reserved.

WHAT IS CLAIMED IS:

1   1.   A market research database comprising:

2   first information relating to a first aspect of

3   market research data;

4   second information relating to a second aspect of

5   market research data; and,

6   a set of dynamic rules, wherein at least one rule

7   of the set of dynamic rules is arranged to respond to entry

8   of first data into the first information by entering second

        data into the second information.

1   2.   The market research database of claim 1 where-

2   in the first information comprises a plurality of sets of

3   market research data, wherein the first data is entered into

4   the plurality of sets, and wherein the set of dynamic rules

5   is arranged so that, when the first data is entered into the

6   plurality of sets, the second data is automatically entered

        into the second information.

1   3.   The market research database of claim 1 where-

2   in the first information comprises a plurality of sets of

3   market research data relating to products, wherein the first

4   data is entered into the plurality of sets, and wherein the

5   set of dynamic rules is arranged so that, when the first
6   data is entered into the sets, the second data is automati-
     cally entered into the second information.

1   4.   The market research database of claim 3 where-
2   in the second data automatically entered into the second
     information is product identification information.

1   5.   The market research database of claim 3 where-
2   in the second information is competitive product informa-
     tion.

1   6.   The market research database of claim 3 where-
2   in the second data automatically entered into the second
     information is characteristic value information.

1   7.   The market research database of claim 1 where-
2   in the second data being entered into the second information
     is product identification information.

1   8.   The market research database of claim 1 where-
2   in the second information is competitive product informa-
     tion.

1   9.   The market research database of claim 1 where-
2   in the second data automatically entered into the second
    information is characteristic value information.

1   10.   The market research database of claim 1
2   wherein the set of dynamic rules includes competitive cate-
    gory rules.

1   11.   The market research database of claim 1
2   wherein the set of dynamic rules includes value mapping
    rules.

1   12.   The market research database of claim 1
2   wherein the first information comprises product definition
    information.

1   13.   The market research database of claim 12
2   wherein the first information comprises naked product infor-
    mation.

1   14.   The market research database of claim 12
    wherein the first information comprises package information.

1
2

        15.   The market research database of claim 14
wherein the first information comprises naked product infor-
mation.

1
2

        16.   The market research database of claim 1
wherein the first information comprises naked product infor-
mation.

1

        17.   The market research database of claim 16
wherein the first information comprises package information.

1

        18.   The market research database of claim 1
wherein the first information comprises package information.

1
2

        19.   The market research database of claim 1
wherein the rules of the set of dynamic rules are customiz-
able.

1
2
3

        20.   The market research database of claim 1
wherein the first data being entered into the first infor-
mation is different than the second data entered into the
second information.

1   21.   The market research database of claim 1

2   wherein the second information is characteristic informa-

tion.

1   22.   A market research database comprising:

2   a first information set containing first market

3   research information;

4   a second information set containing second market

5   research information; and,

6   a third information set containing a set of rules,

7   wherein at least one rule in the third information set is

8   arranged to respond to first data being entered into the

9   first information set by entering second data into the

10   second information set, and wherein the first data entered

11   into the first information set is different from the second

data entered into the second information set.

1   23.   The market research database of claim 22

2   wherein the first information set comprises a plurality of

3   first information sets each containing a different kind of

4   market research information data, wherein the first data is

5   entered into the plurality of first information sets, and

6   wherein the third information set is arranged so that, when

7   the first data is entered into the plurality of first in-

8   formation sets, the second data is automatically entered

       into the second information set.

1   24.   The market research database of claim 22

2   wherein the first information set comprises a plurality of

3   first information sets each containing a different set of

4   market research information relating to products, wherein

5   the first data is entered into all of the plurality of first

6   information sets, and wherein the third information set is

7   arranged so that, when the first data is entered into all of

8   the plurality of first information sets, the second data is

       automatically entered into the second information set.

1   25.   The market research database of claim 24

2   wherein the second data is product identification informa-

       tion.

1   26.   The market research database of claim 25

2   wherein the second information set contains competitive

       product information.

1   27.   The market research database of claim 24

2   wherein the second data automatically entered into the

       second information set is characteristic value information.

1

2

28. The market research database of claim 22 wherein the second data is product identification information.

1

2

29. The market research database of claim 28 wherein the second information set contains competitive product information.

1

2

30. The market research database of claim 22 wherein the second data entered into the second information set is characteristic value information.

1

2

31. The market research database of claim 22 wherein the set of rules includes competitive category rules.

1

32. The market research database of claim 22 wherein the set of rules includes value mapping rules.

1

2

33. The market research database of claim 22 wherein the second information set contains competitive product information.

1   34.   The market research database of claim 22

2   wherein the first information set comprises a plurality of

3   information sets, and wherein one of the plurality of infor-

    mation sets comprises product definition information.

1   35.   The market research database of claim 34

2   wherein another one of the plurality of information set

    comprises naked product information.

1   36.   The market research database of claim 35

2   wherein still another one of the plurality of information

    set comprises package information.

1   37.   The market research database of claim 22

2   wherein the first information set comprises a plurality of

3   information sets, and wherein one of the plurality of infor-

    mation set comprises naked product information.

1   38.   The market research database of claim 37

2   wherein another one of the plurality of information set co-

    mprises package information.

1   39. The market research database of claim 22

2 wherein the first information set a plurality of information

3 sets, and wherein one of the plurality of information set

  comprises package information.

1   40. The market research database of claim 22

2 wherein at least some of the rules of the third information

3 set are customizable.

4   41. The market research database of claim 22

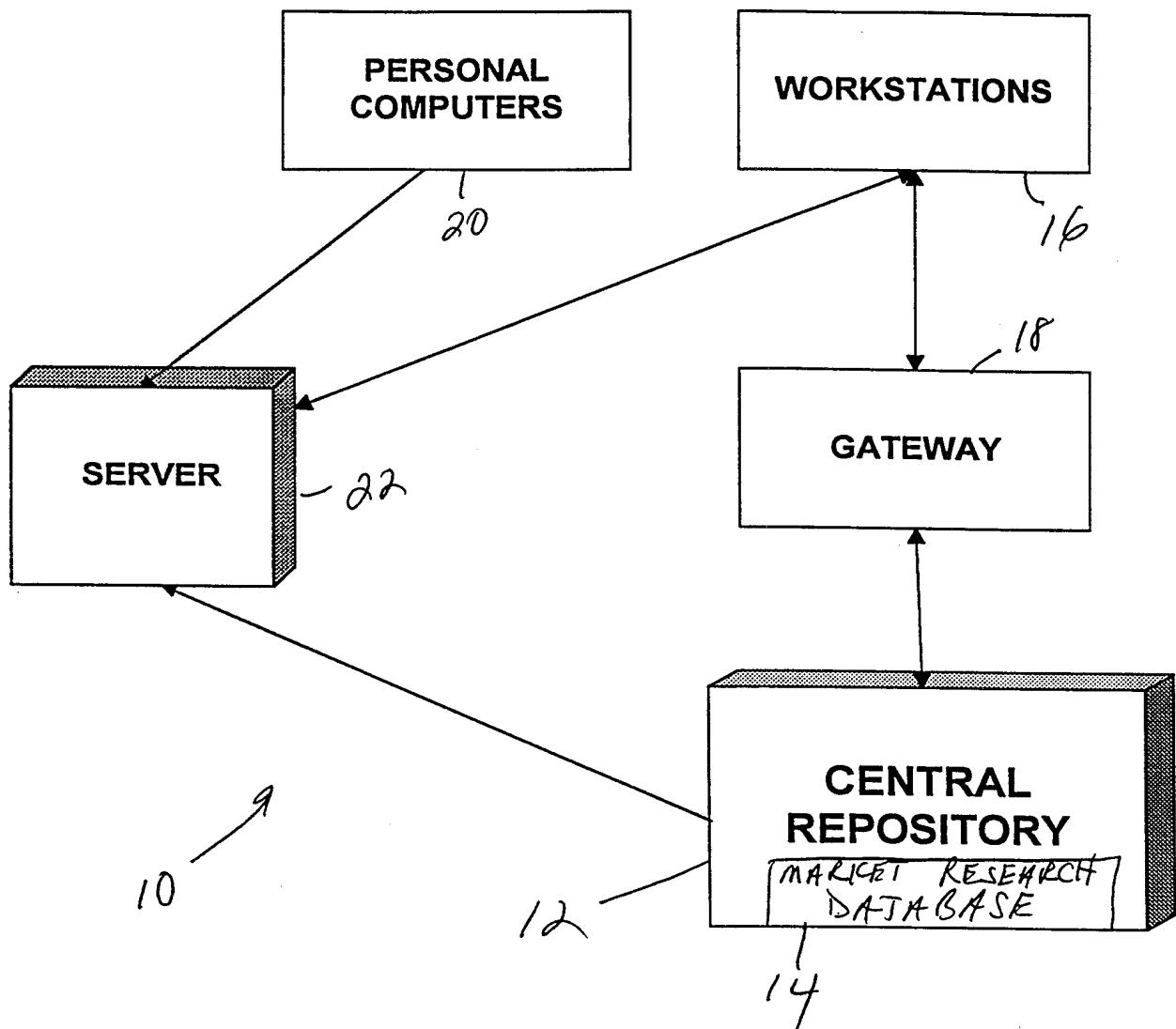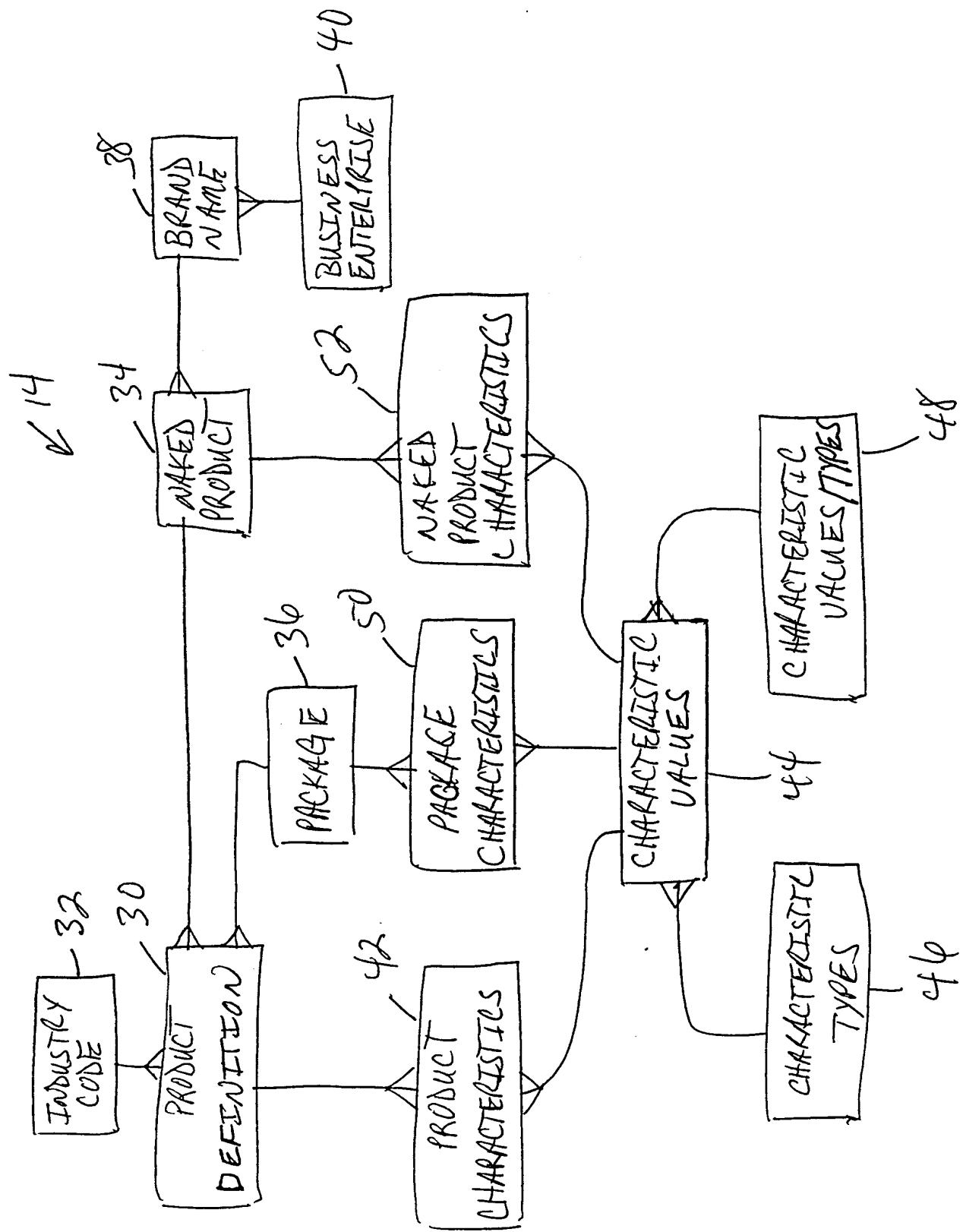 wherein the second information set contains characteristics.

PERSONAL COMPUTERS		WORKSTATIONS

20

16

18

SERVER

GATEWAY

22

CENTRAL REPOSITORY

MARKET RESEARCH DATABASE

9

10

12

14

FIGURE 1

FIGURE 2

PRODUCT DEFINITION

PRODUCT ID	HIST CTL	HIST CNT CTL	PROD NAME	PACKAGE ID	NAKED PROD ID	INDUSTRY CODE (e.g., UPC)	EFC DT	
↑ 60	↑ 62	↑ 64	↑ 64	↑ 68	↑ 70	↑ 72	↑ 74	...

↙ 30

FIGURE 3

PRODUCT CHARACTERISTICS

PRODUCT ID	CHR TYP ID	CHR VL ID	HIST CTL	
↑ 80	↑ 82	↑ 84	↑ 86	...

↙ 42

FIGURE 4

PACKAGE DEFINITION

PACKAGE ID	PACKAGE NAME	HIST. CTL	HIST. CNT CTL	EFT DATE	END DATE	PACK. DESC.	36
90	92	94	96	98	100	102	...

FIGURE 5

PACKAGE CHARACTERISTICS

PACKAGE ID	CHAR TYPE ID	CHAR ID	HIST CTL	50
110	112	114	116	...

FIGURE 6

NAKED PRODUCT

NAKED PRODUCT ID	HIST CTL	HIST OUT CTL	NAKED PRODUCT NAME	BRAND ID	EFC DATE
120	122	124	126	128	130

← 34

FIGURE 7

NAKED PRODUCT CHARACTERISTICS

NACED PRODUCT ID	CHR TYP ID	CHR VL ID			
140	142	144			

← 52

FIGURE 8

BRAND NAME

BRAND ID	BRAND NAME	BUSINESS ENTERPRISE ID	HIST CTL	HIST CNT CTA	EFC DATE
↑ 150	↑ 152	↑ 154	↑ 156	↑ 158	↑ 160

/ 38

. . .

FIGURE 9

BUSINESS ENTERPRISE

BUSINESS ENTERPRISE ID	BUSINESS ENTERPRISE NAME	HIST CTL	HIST CNT CTA	EFC DATE
↑ 170	↑ 172	↑ 174	↑ 176	↑ 178

/ 40

. . .

FIGURE 10

CHARACTERISTIC VALUE

CHR TYP ID	CHR VL ID	HIST CTL	HIST CNT CTL	EFC DATE	
↑ 180	↑ 162	↑ 164	↑ 166	↑ 168	· · ·

← 244

FIGURE 11

CHARACTERISTIC TYPE

CHR TYP ID	CHR TYP NAME	HIST CTL	HIST CNT CTL	EFC DATE	
↑ 190	↑ 192	↑ 194	↑ 196	↑ 198	· · ·

← 246

FIGURE 12

CHARACTERISTIC VALUE/TYPE

CHR VL ID	CHR VL ID	HIST CTL	HIST CNT CTL	EFC DATE	
↑ 200	↑ 202	↑ 204	↑ 206	↑ 208	· · ·

← 248

FIGURE 13

BRAND ID	BRAND NAME	#IST CTL	#IST CNT CTL	EFL DATE	/210
1	ABC	0	1	1/1/97	
1	A BC	1	0	1/1/96	
1	Ab C	2	0	1/1/95	
2	DEF	0	1	4/1/97	

212   214   216   218   220

FIGURE 14

RULE DEFINITIONS

RULE ID	COMP. CAT. ID	HIST. CTL	HIST. CNT CTL	EFC DA	RULE	
↑ 230	↑ 232	↑ 234	↑ 236	↑ 238	↑ 240	. . .

54 ↗

FIGURE 15

RULES

RULE ID	RULES
↑ 242	↑ 244

56 ↗

FIGURE 16

COMPETIVE CATEGORIES

COMP. CAT ID	COMP CAT NAME	HIST CTL	HIST CNT CTL	EFC DT	PROD ID	...
↑ 252	↑ 254	↑ 256	↑ 258	↑ 260	↑ 262	

↗ 250

FIGURE 17